In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A system, comprising:

a processor that executes an algorithm;

a hardware unit that comprises one or more physical resources; and

an abstraction layer implemented by said processor that facilitates communication between the algorithm and the hardware unit through the use of a plurality of functions and that creates a reference to a logical resource that is associated with a corresponding physical resource, the plurality of functions comprise command functions that request and grant ~~the~~ an identifier to the algorithm including a command function that branches to a function that is optimized for ~~the~~ configured settings of the logical resource based upon ~~the~~ a vector table that associates the reference to a logical resource with a memory location of the function that is optimized, and

wherein each logical resource is associated with at least one private state that represents ~~the~~ most recently configured settings of the logical resource.

2. (Original) The system of claim 1 wherein the reference comprises a pointer to the logical resource.

3. (Original) The system of claim 1 wherein the plurality of functions are selected from the group consisting of command functions that request and grant the identifier to the algorithm, configuration functions that pre-compute and store register values and algorithm settings, synchronization functions that align the

logical resource with the physical resource, and a combination thereof.

4. (Canceled)

5. (Previously Presented) The system of claim 1 wherein the command functions comprise a function that monitors the physical resources and updates a corresponding vector table that associates the reference to a logical resource with a memory location of function optimized for a current operation.

6. (Previously Presented) The system of claim 1 wherein the command functions comprise a function that does not write to a register associated with the physical resource if a previous use of the physical resource has left the register in a state compatible with a current operation.

7. (Canceled)

8. (Previously Presented) The system of claim 1 wherein the function that branches and the function that is optimized for the configured settings comprise functions with identical function signatures.

9. (Canceled)

10. (Currently Amended) A system, comprising:

a processor that executes an algorithm;

a hardware unit that comprises one or more physical resources;

an abstraction layer implemented by said processor that facilitates communication between the algorithm and the hardware unit through the use of a plurality of functions

and that creates a reference to a logical resource that is associated with a corresponding physical resource, wherein the plurality of functions are selected from the group ~~comprise~~ comprising configuration functions that pre-compute and store register values and system state settings, and wherein the configuration functions comprise a function that selects and stores an address of a function that is optimized for a current operation; and

wherein each logical resource is associated with at least one private state that represents ~~the~~ most recently configured settings of the logical resource.

11. (Currently Amended) A method for achieving ~~high-performance~~ hardware abstraction, comprising:

creating a reference to a logical resource that is associated with a corresponding physical resource;

associating with the logical resource one or more private states that represents ~~the~~ most recently configured settings of the logical resource; and

executing a plurality of functions that facilitate communication between the physical resource and an algorithm, wherein the plurality of functions comprise command functions that request and grant ~~the~~ an identifier to the algorithm including a function that branches to a function that is optimized for the configured settings based upon ~~the~~ a vector table that associates the reference to a logical resource with a memory location of the function that is optimized.

12. (Original) The method of claim 11 wherein the reference comprises a pointer to the logical resource.

13. (Original) The method of claim 11 wherein the plurality of functions are selected from the group consisting of command functions that request and grant ~~the~~ an identifier to the algorithm, configuration functions that pre-compute and store register values and algorithm settings, synchronization functions that align the logical resource with the physical resource, and a combination thereof.

14. (Canceled)

15. (Previously Presented) The method of claim 11 wherein the command functions comprise a function that monitors the physical resources and updates a corresponding vector table that associates the reference to a logical resource with a memory location of function optimized for a current operation.

16. (Previously Presented) The method of claim 11 wherein the command functions comprise a function that does not write to a register associated with the physical resource if a previous use of the physical resource has left the register in a state compatible with a current operation.

17. (Canceled)

18. (Previously Presented) The method of claim 11 wherein the function that branches and the function that is optimized for the configured settings comprise functions with identical function signatures.

19. (Canceled)

20. (Currently Amended) A method for achieving ~~high-performance~~ hardware abstraction, comprising:

creating a reference to a logical resource that is associated with a corresponding physical resource;

associating with the logical resource one or more private states that represents ~~the~~ most recently configured settings of the logical resource; and

executing a plurality of functions that facilitate communication between the physical resource and an algorithm, wherein the plurality of functions comprises configuration functions that pre-compute and store register values and algorithm settings and wherein the configuration functions comprise a function that selects and stores an address of a function that is optimized for a current operation.

21 to 30. (Canceled)